Heat Rejection System for Thermal Management in Space Utilizing a Planar Variable-Conductance Heat Pipe

Completed Technology Project (2013 - 2016)

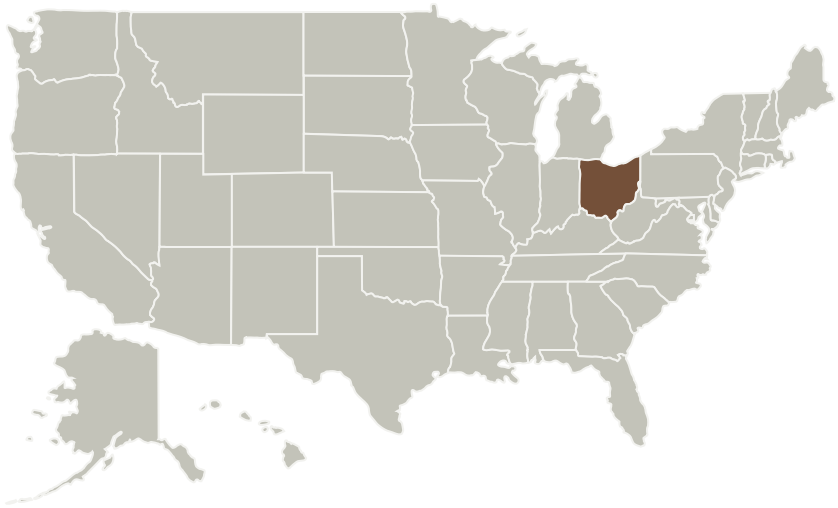
Project Introduction

The integral planar variable conductance heat pipe (VCHP) technology represents a novel, low-TRL heat rejection technology which should operate efficiently and reliably across a wide range of thermal environments. The concept consists of a planar heat pipe whose condenser acquires the excess thermal energy from the thermal control system (TCS) and rejects it at its condenser whose outer surface acts as a radiating surface. The VCHP is made from thermally conductive polymers and the working fluid is methanol. It has a non-condensable gas (air) so as to vary the active radiator surface depending on the heat load.

Anticipated Benefits

The integral planar variable conductance heat pipe (VCHP) technology represents a novel, low-TRL heat rejection technology which should operate efficiently and reliably across a wide range of thermal environments.

Primary U.S. Work Locations and Key Partners



Primary U.S. Work Locations
Ohio

Project Image Heat Rejection System for Thermal Management in Space Utilizing a Planar Variable-Conductance Heat Pipe

Table of Contents

Heat Rejection System for Thermal Management in Space Utilizing a Planar Variable-Conductance Heat Pipe

Completed Technology Project (2013 - 2016)

Images

11962-1363026240659.jpg
Project Image Heat Rejection System for Thermal Management in Space Utilizing a Planar Variable-Conductance Heat Pipe
(https://techport.nasa.gov/image/1690)

Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Responsible Program:

Space Technology Research Grants

Project Management

Program Director:

Claudia M Meyer

Program Manager:

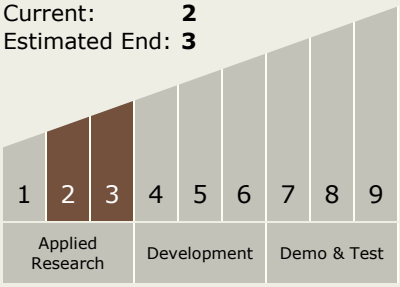
Hung D Nguyen

Principal Investigator:

Yasuhiro Kamotani

Technology Maturity (TRL)

Start: **2**
Current: **2**
Estimated End: **3**



Technology Areas

Primary:

Continued on following page.

Heat Rejection System for Thermal Management in Space Utilizing a Planar Variable-Conductance Heat Pipe

Completed Technology Project (2013 - 2016)

Technology Areas *(cont.)*

- TX14 Thermal Management Systems
  - TX14.2 Thermal Control Components and Systems
    - TX14.2.3 Heat Rejection and Storage